

What is claimed is:

1. A method for fabricating a semiconductor light emitting device, the method comprising the steps of:

(A) repeatedly forming, on a first nitride based Group III-V compound semiconductor layer, stripe-shaped masking films in a predetermined cycle in a width-wise direction thereof, each masking film comprising first width sections having a predetermined width and second width sections which are adjacent to both ends of each first width section and have a greater width than the predetermined width;

(B) selectively growing a second nitride based Group III-V compound semiconductor layer from exposed parts of a surface of the first nitride based Group III-V compound semiconductor so as to cover the masking films and the exposed parts, each of the exposed parts being located between the masking films; and

(C) layering a semiconductor laser structure on the second nitride based Group III-V compound semiconductor layer, the semiconductor laser structure including an active layer which substantially extends in a length-wise direction of the masking films and level difference portions which extend in the width-wise direction by a structure in which a portion located above the second width sections is lower than a portion located above the first width sections.

2. The method for fabricating a semiconductor light emitting device according to claim 1, wherein in the semiconductor laser structure, the level difference portions are formed such that the active layer of the portion located above the first width sections is joined to other semiconductor layers than the active layer of the portion located above the second width sections.

3. The method for fabricating a semiconductor light emitting device

according to claim 2, wherein in the semiconductor laser structure, the level difference portions are formed such that the active layer of the portion located above the first width sections is joined to a semiconductor layer having higher bandgap energy than the active layer of the portion located above the second width sections.

4. The method for fabricating a semiconductor light emitting device according to claim 3, wherein the semiconductor laser structure includes cladding layers between which the active layer is sandwiched in a layering direction, and the semiconductor layer having higher bandgap energy than the active layer is the cladding layers.

5. The method for fabricating a semiconductor light emitting device according to claim 1, wherein each of the masking films consists of an insulating film.

6. The method for fabricating a semiconductor light emitting device according to claim 1, wherein when layering the semiconductor laser structure in the step (C), ridges are formed to extend in the length-wise direction of the masking films and to be located above the respective masking films.

7. The method for fabricating a semiconductor light emitting device according to claim 1, wherein the difference in width between the first width sections and second width sections of the masking films is 16% or more and 84% or less of the predetermined width of the first width sections.

8. The method for fabricating a semiconductor light emitting device according to claim 1, wherein, in the semiconductor laser structure, a percentage of the distance between a facet of a resonator and the level difference portion to a length of the resonator is 10% or less.

9. The method for fabricating a semiconductor light emitting device

according to claim 1, wherein the portion of the semiconductor laser structure located above the second width sections has a current non-injection structure.

10. The method for fabricating a semiconductor light emitting device according to claim 9, wherein the current non-injection structure is obtained by forming no electrodes at the portion of the semiconductor laser structure located above the second width sections.

11. The method for fabricating a semiconductor light emitting device according to claim 9, wherein the current non-injection structure is obtained by forming an insulating layer under an electrode at the portion of the semiconductor laser structure located above the second width sections.

12. The method for fabricating a semiconductor light emitting device according to claim 9, wherein, in the semiconductor laser structure, a region where a dielectric film for coating a facet of a resonator is adhered is located within the portion of the semiconductor laser structure located above the second width sections.

13. The method for fabricating a semiconductor light emitting device according to claim 12, wherein the dielectric film is a dielectric multilayer film which behaves as a highly reflective film to laser light generated in the laser structure.

14. The method for fabricating a semiconductor light emitting device according to claim 12, wherein the dielectric film behaves as a low reflective film to laser light generated in the laser structure.

15. The method for fabricating a semiconductor light emitting device according to claim 12, wherein the dielectric film is a film for protecting a facet of the resonator from pollution.

16. The method for fabricating a semiconductor light emitting device

according to claim 1, wherein the nitride based Group III-V compound semiconductor is a GaN semiconductor.

17. The method for fabricating a semiconductor light emitting device according to claim 1, wherein the first nitride based Group III-V compound semiconductor layer is formed on a sapphire substrate.

18. The method for fabricating a semiconductor light emitting device according to claim 1, wherein the second nitride based Group III-V compound semiconductor grows from the spaces between the masking films onto the masking films substantially in parallel with a main surface of the substrate.

19. The method for fabricating a semiconductor light emitting device according to claim 1, wherein, in the second nitride based Group III-V compound semiconductor layer, a dislocation density of the portion grown on the masking films is lower than the dislocation density of a portion grown between the masking films.

20. The method for fabricating a semiconductor light emitting device according to claim 1, wherein portions of the second nitride based Group III-V compound semiconductor layer which have grown on the respective width sections of the masking films are planarized.

21. A semiconductor light emitting device comprising:

a first nitride based Group III-V compound semiconductor layer;

stripe-shaped masking films formed on the first nitride based Group III-V compound semiconductor layer so as to be repeated in a predetermined cycle in a width-wise direction thereof, each masking film comprising first width sections having a predetermined width and second width sections which are adjacent to both ends of each first width section and have a greater width than the predetermined width;

a second nitride based Group III-V compound semiconductor layer which has been grown selectively from exposed parts of the first nitride based Group III-V compound semiconductor layer so as to cover the masking films and the exposed parts, each of the exposed parts being located between the masking films; and

a semiconductor laser structure layered on the second nitride based Group III-V compound semiconductor layer, the semiconductor laser structure including an active layer which substantially extends in the length-wise direction of the masking films and level difference portions which extend in the width-wise direction by a structure in which a portion located above the second width sections is lower than a portion located above the first width sections.

22. The semiconductor light emitting device according to claim 21, wherein in a section taken along the length-wise direction, the masking films are positioned under the active layer.